

IN THE CLAIMS

This listing of the claims will replace all prior versions and listings of claims in the present application.

Listing of Claims

1. (currently amended) A content relay node having a function of routing data packets in an application layer of the International Organization for Standardization/Open Systems Interconnection (ISO/OSI) reference model, comprising:
 - a receiving unit having a plurality of input ports;
 - a transmitting unit having a plurality of output ports;
 - a data processing unit;
 - a switch unit for connecting said receiving unit, said transmitting unit, and said data processing unit;
 - a plurality of storages having a data storing function; and
 - a routing control unit for controlling said transmitting and switch units, wherein each of said data packets includes a storage address of the application layer for identifying said plurality of storages on a network and a data attribute,
 - wherein said receiving unit has means for receiving a data packet,
 - means for extracting the storage address of the application layer and the data attribute from the data packet, means for transferring the data attribute to said data processing unit and the storage address of the application layer said routing control unit, and means for sending the data packet to said switch unit,
 - wherein said routing control unit has means for selecting, as a destination of a received data packet, one of the said transmitting unit and

said data processing unit on the basis of routing information including the storage address of the application layer and instructing said switch unit to make switching,

wherein said storage has means for storing the received data,

wherein said switch unit has means for switching a route according to an instruction from said routing control unit,

wherein said data processing unit has means for storing or transmitting data based on data attribute, and

wherein said transmitting unit has means for processing the header of a data packet in accordance with a control signal from said routing control unit and means for transferring the data packet to a neighboring relay node.

2. (previously presented) The content relay node according to claim 1, wherein said routing control unit further comprises:

a storage routing table (SRT) expressed by using said network storage address (NSA) for identifying a storage on a network; and

means for determining one of said output ports corresponding to the designated NSA by using said SRT.

3. (original) The content relay node according to claim 2, wherein said NSA is expressed by one piece of or a combination of a plurality of pieces of information indicative of position of a relay node on a network, identification information of a storage distinctive physically or logically, and information for specifying a data storage location by designating a directory or a block address in a storage area.

4. (currently amended) The content relay node according to claim 1, wherein the storage has a memory or a memory space constructed by one Hard Disk Drive (HDD) or a plurality of media.

5. (previously presented) The content relay node according to claim 1, wherein said switch unit has means for sending an input data packet to the data processing unit in order to store received data into the storage, and

wherein said storage has means for receiving data from said data processing unit and storing the received data in the node at least until transfer of the data to the next relay node is completed.

6. (previously presented) The content relay node according to claim 5, further comprising:

at least one of means for storing received data in the form of a packet and means for rebuilding data from a plurality of packets and storing the rebuilt data in the node, in said data storing process.

7. (previously presented) The content relay node according to claim 1, further comprising:

means for reading out data stored in the node and re-transmitting the data in the case where the receiving unit detects a data transmission request.

8. (currently amended) The content relay node according to claim 1, further comprising:

means for determining a route and constructing ~~an~~ a storage routing table (SRT) on the basis of data size of a received data flow and available memory space in the next storage for relay at the time of determining correspondence, to be registered in the SRT, between a destination network storage address (NSA) and the next NSA for relay.

9. (previously presented) The content relay node according to claim 1, further comprising:

means for notifying the other nodes constructing a content routing network of available memory spaces to each other.

10. (previously presented) The content relay node according to claim 1, wherein said receiving unit has means for determining whether data supplied to an input port is to be routed based on a storage address or not.

11. (previously presented) The content relay node according to claim 1, further comprising:

means for using route information obtained by function of a transfer protocol of a lower layer at the time of determining a transfer route.

12. (previously presented) The content relay node according to claim 1, further comprising:

means for dividing data into a plurality of packets in an application layer as necessary and transmitting the packets.

13. (original) The content relay node according to claim 1, wherein said data packet is comprised of a header portion including a data attribute of the application layer and data portion including the contents of data.

14. (currently amended) The content relay node according to claim 1, wherein said data packet includes in a header portion thereof a destination network storage address (NSA) and a source NSA of the data packet.

15. (original) The content relay node according to claim 1, wherein said data packets include, as a data attribute included in the header, data identifiers indicating that the data packets are generated from the same data, and packet identifiers indicative of the order of the data packets as re-building information in the case where the data is divided and the resultant is transmitted.

16. (original) The content relay node according to claim 1, wherein said data packet includes priority information of the data packet in its header in order to preferentially determine the route according to a data attribute.